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INCREASED OIL PRODUCTION AND RESERVES UTILIZING SECONDARY/TERTIARY RECOVERY TECHNIQUES ON SMALL RESERVOIRS IN THE PARADOX BASIN, UTAH

Contract No. DE-FC22-95BC14988

Utah Geological Survey (UGS), Salt Lake City, Utah 84114-6100

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Objectives

The primary objective of this project is to enhance domestic petroleum production by demonstration and technology transfer of an advanced oil recovery technology in the Paradox basin, southeastern Utah. If this project can demonstrate technical and economic feasibility, the technique can be applied to about 100 additional small fields in the Paradox basin alone, and result in increased recovery of 150 to 200 million bbl of oil. This project is designed to characterize five shallow-shelf carbonate reservoirs in the Pennsylvanian (Desmoinesian) Paradox Formation and choose the best candidate for a pilot demonstration project for either a waterflood or carbon dioxide-(CO₂-) flood project. The field demonstration, monitoring of field performance, and associated validation activities will take place in the Paradox basin within the Navajo Nation. The results of this project will be transferred to industry and other researchers through a petroleum extension service, creation of digital databases for distribution, technical workshops and seminars, field trips, technical presentations at national and regional professional meetings, and publication in newsletters and various technical or trade journals.

Summary of Technical Progress

Several technology transfer activities were performed this quarter as part of the geological and reservoir characterization of five productive carbonate buildups in the Desert Creek zone of the Paradox Formation of the Paradox basin, San Juan County, Navajo Nation, Utah: (1) project materials and results were displayed at the Utah Geological Survey (UGS) booth during conferences and meetings, (2) project results were published, and (3) the project Internet web site was updated.

Construction of the new UGS Sample Library, which now houses over 3200 ft of core from project wells, was completed in September 1998. During the Sample Library open house, held on October 6, 1998, the public was invited to interact with project team members by examining Runway field core and reviewing poster displays of reservoir modeling, simulation results, and project objectives (Fig. 1). Project materials were also displayed and publications made available at the UGS booth during the UGS-hosted Petroleum Technology Transfer Council (PTTC) symposium entitled

Fractured Reservoirs: A Symposium on Current Research, Modeling, and Enhanced Recovery Techniques, October 23, 1998, and at the 1998 annual meeting of the Interstate Oil and Gas Compact Commission (IOGCC), December 6-8, 1998, both in Salt Lake City, Utah. The PTTC symposium was attended by 50 petroleum geologists and engineers. The IOGCC represents 36 oil- and gas-producing states. Attendees included government officials and regulators, industry representatives, state geologists, and politicians. The IOGCC assists states in maximizing domestic oil and gas production while protecting the environment.

A paper was published by Petroleum Information/Dwights describing the facies and reservoir characteristics of the project fields, and the Anasazi field and Runway field modeling and simulation results.¹ The project home page on the UGS Internet web site (<http://www.ugs.state.ut.us/paradox.htm>) was updated with the latest quarterly technical report and project publications list.



Figure 1. Attendees at the new UGS Sample Library open house examine core from the Runway project field, San Juan County, Utah. Photo by Tim Madden, Utah Geological Survey.

Reference

1. S. L. Montgomery, Pennsylvanian Carbonate Buildups, Southern Paradox Basin - New Opportunities for Increased Reserves, *Petroleum Frontiers*, 15 (4):1-76(1998).